# Project 1: Exploring Weather Trends

## Summary

In this project, you will analyze local and global temperature data and compare the temperature trends where you live to overall global temperature trends. Your goal will be to create a visualization and prepare a write up describing the similarities and differences between global temperature trends and temperature trends in the closest big city to where you live.

## Overall steps

The project requires the following steps:

1. Extract data from a database using a SQL query.
2. Calculate a moving average in a spreadsheet.
3. Create a line chart in a spreadsheet.

## Step 1: Extract the data

This step was completed using SQL to extract the data from the database. There are three tables in the database:

- city_list - This contains a list of cities and countries in the database.
- city_data - This contains the average temperatures for each city by year (ºC).
- global_data - This contains the average global temperatures by year (ºC).

I will start by querying the city_list table to get a list of the cities in Saudi Arabia and find the nearest one to the place where I live. I will then extract the corresponding data from the city_data table.

```
--extract the city level data
select * from city_list where country = 'Saudi Arabia'
select * from city_data where city = 'Riyadh'

--extract the global data
select * from global_data
```

## Step 2: Calculate moving average

A 10-year moving average was calculated using the data analysis toolpack in Excel. One can calculate a moving average using any number of periods. But the greater the period, the smoother the average will be (smoother peaks and valleys). And the lower the value, the closer the moving averages are to the actual data points.

## Step 3: Create a line chart

The 10-year moving average was plotted to help identify any major trends in temperature. This step was completed using Excel spreadsheet.

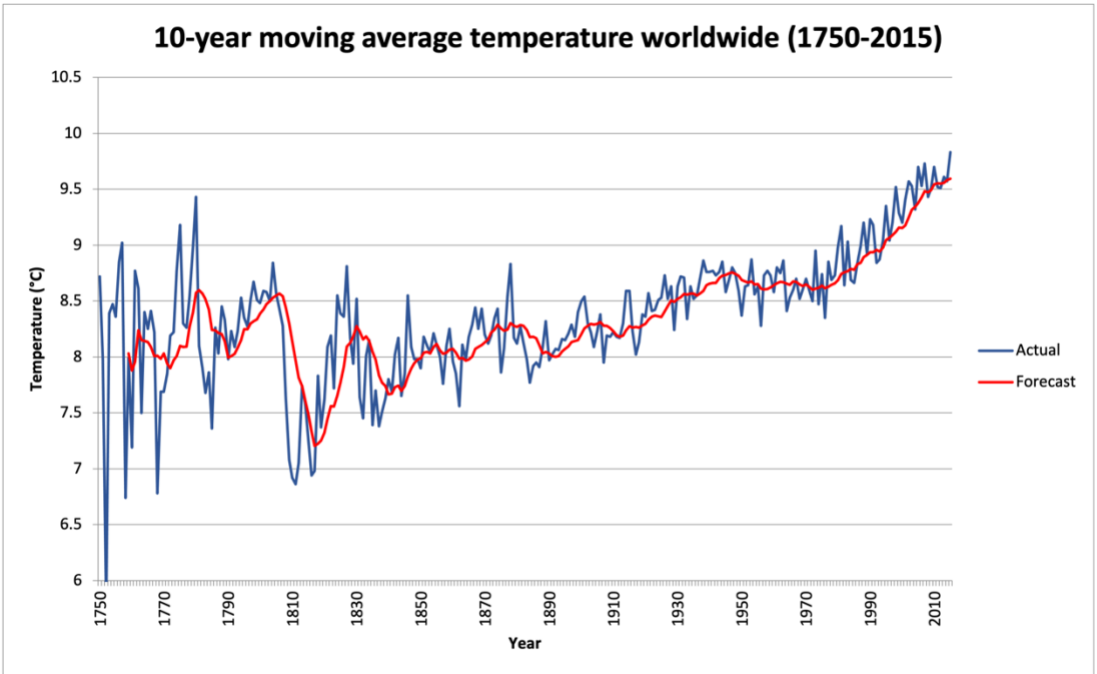


*Figure 1. 10-year moving average temperature worldwide (1750 - 2015)*

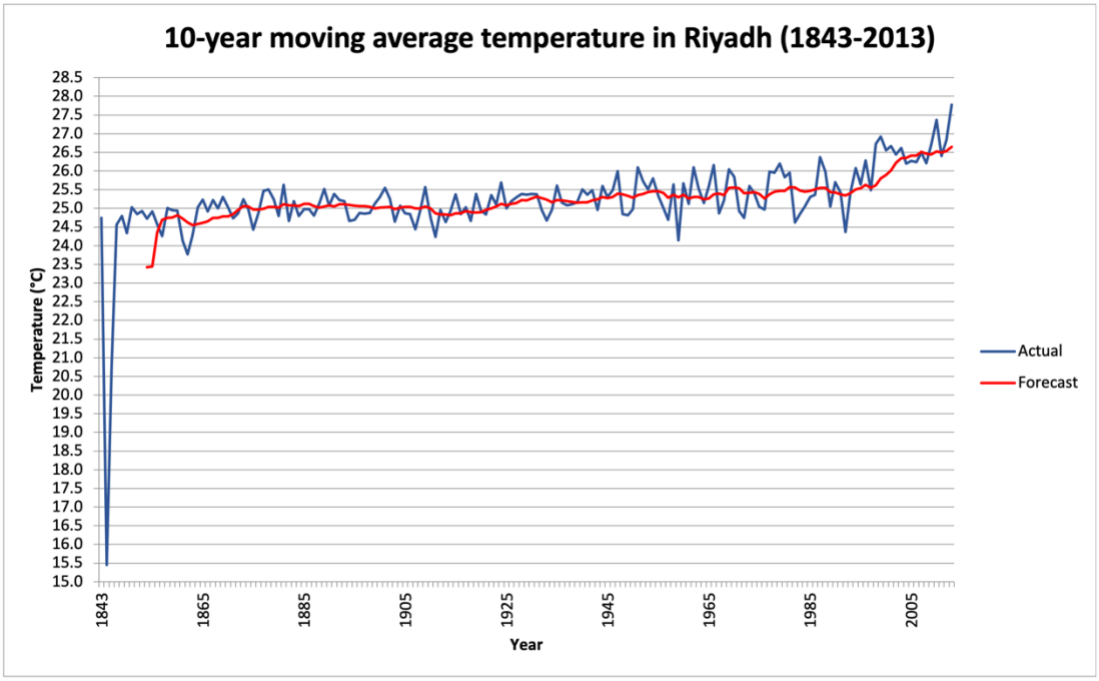


*Figure 2. 10-year moving average temperature in Riyadh (1843 - 2013)*

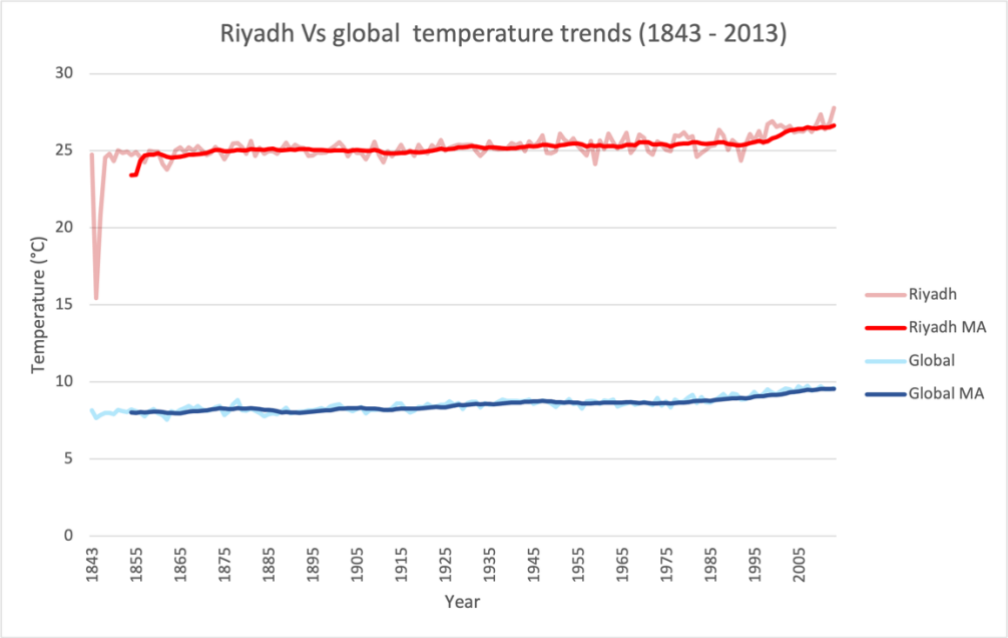


*Figure 3. Local versus global temperatures (1843 – 2013)*

## General observations:

1. Globally, the 10-year moving average temperature varies between 7.2 °C and 9.6 °C. Whereas in Riyadh, the 10-year moving average temperature varies between 23.4 °C and 26.7°C.
2. Figure 3 shows a large difference in temperatures between the city of Riyadh and the global average.
3. The results show that the average temperature in Riyadh is higher compared to the global average.
4. A significant increase in the annual average temperature can be observed in Riyadh during the last couple decades (see Figure 2).
5. Overall, the average global temperatures have been rising over the past 150 years (see Figure 1).